

BLOWOUT PREVENTION

It is not certain what caused the blowout of IXTOC I on June 3, 1979. PEMEX, the Mexican national oil company, said that the blowout was caused by a loss of drilling "mud" which occurred while the crew was attempting to remove the inner drill tubing and bit from the hole.¹⁷ (Mud is the liquid that is circulated through the wellbore during rotary drilling and workover operations)¹⁸

Testifying before a joint hearing of the United States Senate Committees on Commerce, Science, and Transportation and Energy and Natural Resources on December 5, 1979, Jerome Milgram, a professor of ocean engineering at the Massachusetts Institute of Technology and an inventor of oil spill cleanup equipment, said that efforts to kill the well were halted when "it was observed that gas and oil were coming out of the seabed in the vicinity of the well, indicating a lack of integrity of casing structure. The pressure required to pump the mud at this time was very high..¹⁹

Testifying before the same committee, Donald Kach, Chief of the USGS conservation division said that by USGS standards, mud supplies were inadequate on the rig and that there was a question about the experience and qualifications of the Mexican drilling crew.¹⁹

At the same hearing, Stephen Mahood, SEDCO, executive vice-president, said PERMARGO (a Mexican drilling firm) which held two long-term PEMEX offshore drilling contracts, leased the SEDCO rig. PERMARGO also contracted for a few SEDCO personnel. "No SEDCO personnel participated in the decision making process or had access to the geological data upon which PEMEX based its judgments pertaining to the drilling of the well", Mahood said. "All SEDCO equipment that was provided was operating properly."¹⁹

On October 16, 1979, the Texas House Committee on Environmental Affairs held a public hearing in Austin to find out what standard and customary measures are taken to prevent blowouts in Federal and State waters.

A blowout is the direct result of a "kick". A "kick" is an intrusion of a formation of fluid.¹⁸ Blowout Prevention schools are required by the USGS of companies drilling in federal waters. The USGS requires that everyone involved in the operation of the well should know the procedure for killing a well and be certified

annually. The USGS also requires mechanical blowout preventers, pressure monitoring systems, well casing specifications and weekly tests of equipment and procedures.²⁰

Jim Herring of the Texas Railroad Commission testified that the oil and gas division of the RRC exercises control of those wells drilled within state waters and is not involved with drilling beyond the 12-mile limit. The Commission has operational requirements designed to keep oil spills from occurring, but does not now require that personnel attend blow-out prevention schools.

Mr. Bruce Damron, Instructor at A&M University, testifying before the committee emphasized that one way to prevent kicks would be to make it mandatory for "trip tanks" to be placed on all rigs.

A trip tank involves a calibrated tank used for the monitoring of mud volume used to replace the steel volume of the drill pipe when pulling the drill string from the wellbore.

The trip tank is only used for the monitoring of mud volume when pulling out of the hole. These tanks are generally calibrated to five barrels and fill the hole by gravity feed.

When the drill pipe is being pulled from a wellbore, the hole experiences a reduction in bottom-hole pressure, due to the interaction, or friction between the drill pipe and mud, known as the swabbing pressure. If the pressure reduction is great enough, a volume of formation fluid can be allowed to blow into the wellbore. This volume of fluid allowed into the wellbore is monitored by the trip tank. The intrusion of a formation fluid is a potential hazard to the drilling operation and, if encountered, the drill pipe that has been pulled, should be run back into the hole and the intruding fluid circulated out, before it becomes a hazard.

The trip tank allows the operator to determine exactly how much is being placed in the hole, versus a known volume of steel.²¹